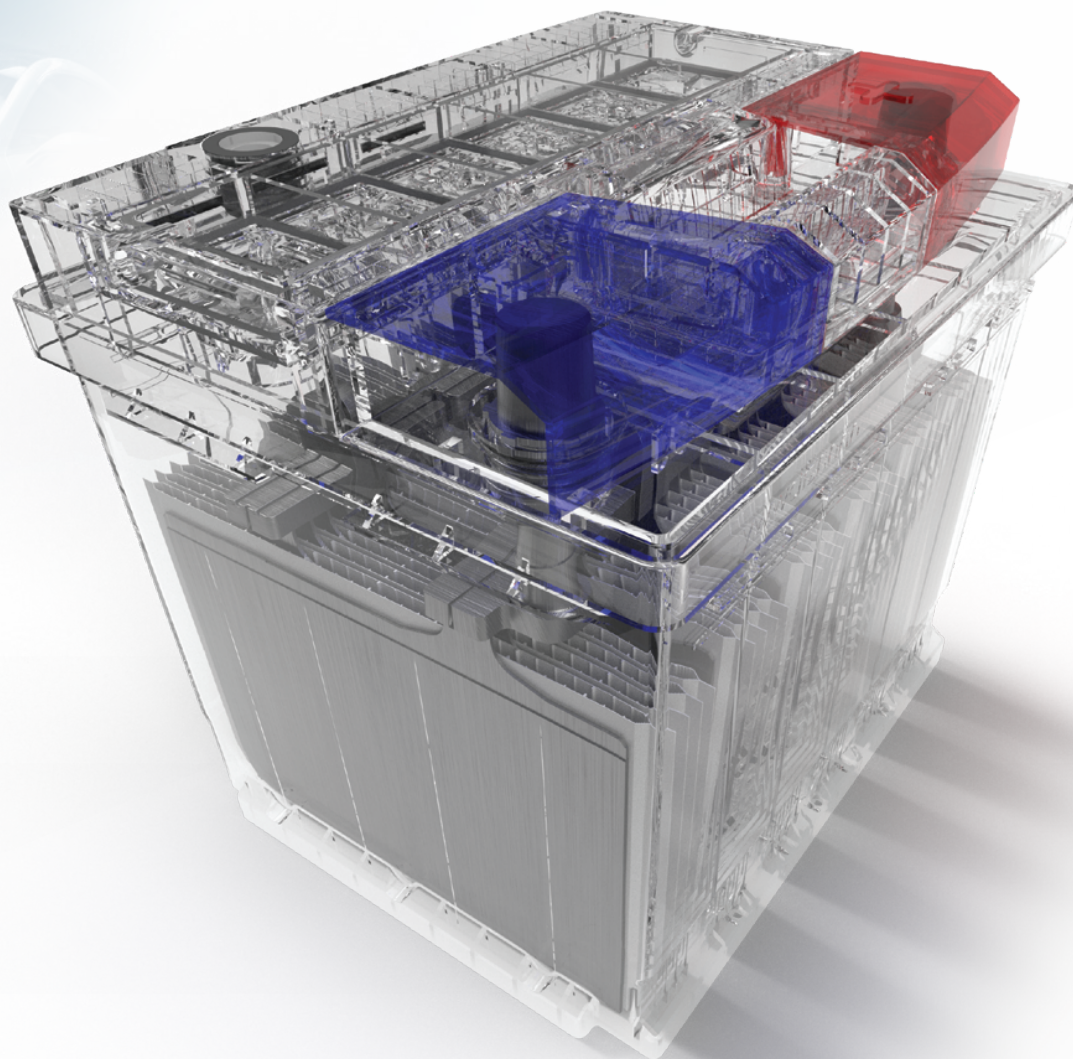


# MONBAT<sup>®</sup>

## BATTERIES



# AUTOMOTIVE CATALOGUE



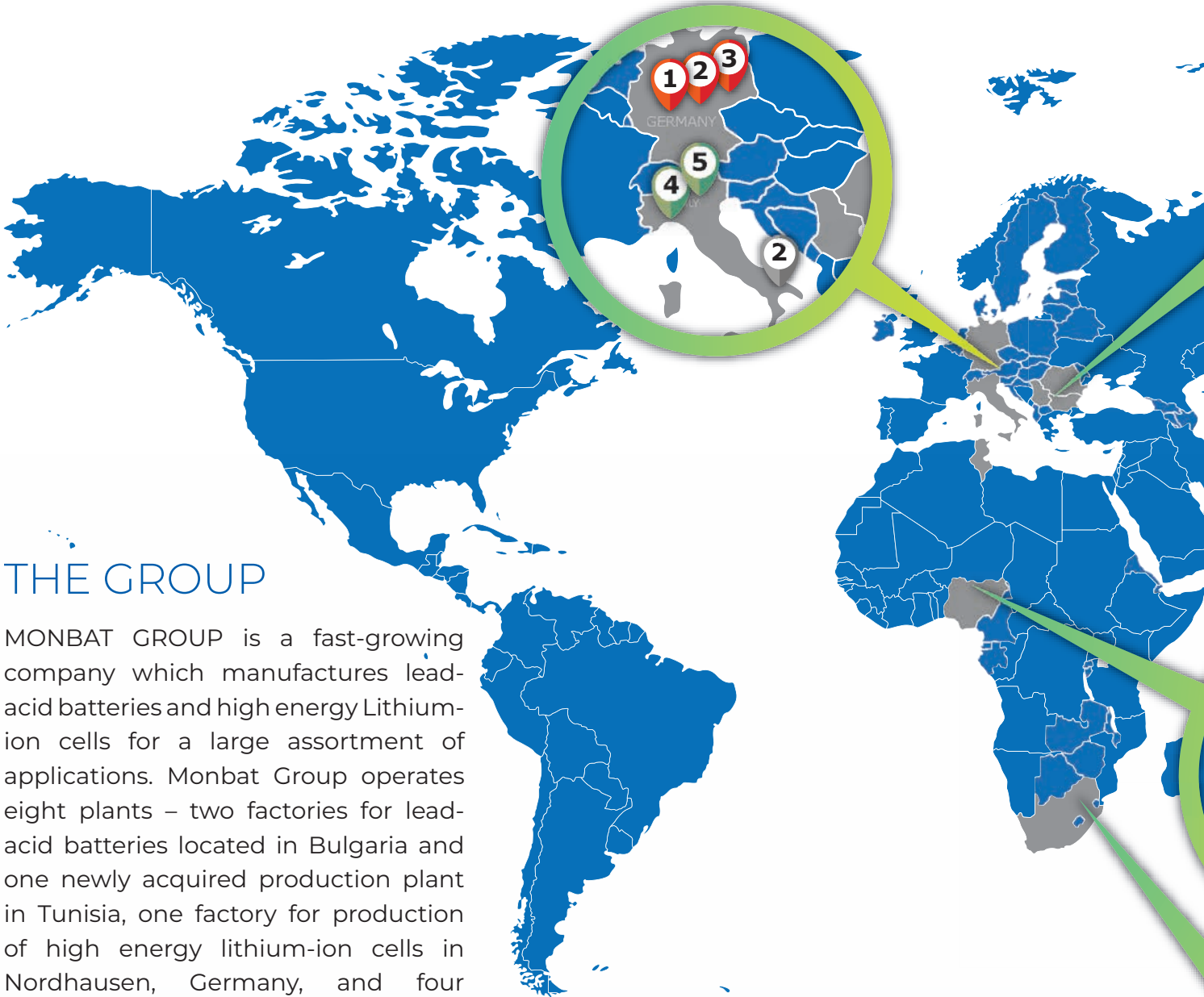
**HIGH HEAT  
SERIES**

LIGHT VEHICLES

COMMERCIAL AND HEAVY-DUTY VEHICLES

SPECIAL VEHICLES

# ABOUT MONBAT GROUP



## THE GROUP

MONBAT GROUP is a fast-growing company which manufactures lead-acid batteries and high energy Lithium-ion cells for a large assortment of applications. Monbat Group operates eight plants – two factories for lead-acid batteries located in Bulgaria and one newly acquired production plant in Tunisia, one factory for production of high energy lithium-ion cells in Nordhausen, Germany, and four recycling plants for used lead-acid batteries located in Bulgaria, Romania, Serbia and Italy.

## THE COMPANY

The products of our company have been present on the international market for more than 60 years. The wide product range includes starter batteries, leisure & marine, solar, stationary AGM batteries and special batteries for military applications. Our production facilities are equipped with state-of-the-art equipment and machines using the latest technologies, granting high quality products and reaching an annual sales volume of over 5M batteries.



### THE LEAD-ACID BUSINESS

- 1 **MONBAT TRADING OOD** SOFIA, BULGARIA
- 2 **MONBAT AD** MONTANA, BULGARIA
- 3 **START AD** DOBRICH, BULGARIA
- 4 **ENERGY BATTERIES NIGERIA LIMITED** LAGOS, NIGERIA
- 5 **SOCIÉTÉ NOUVELLE DES ACCUMULATEURS** BEN AROUS, TUNISIA
- 6 **MONBAT SOUTH AFRICA PRORPRIETARY LTD** MEADOWDALE, SOUTH AFRICA
- 7 **MONBAT ROMANIA SRL** BUCHAREST, ROMANIA
- 8 **YU MONBAT DOO** YAGODINA, SERBIA
- 9 **SOCIÉTÉ NOUR DE DISTRIBUTION** BEN AROUS, TUNISIA

### THE LITHIUM-ION BUSINESS

- 1 **MONBAT HOLDING GMBH** NORDHAUSEN, GERMANY
- 2 **EAS BATTERIES GMBH** NORDHAUSEN, GERMANY
- 3 **MONBAT NEW POWER GMBH** NORDHAUSEN, GERMANY

### RECYCLED INDUSTRIAL MATERIALS

- 1 **MONBAT RECYCLING EAD** MONTANA, BULGARIA
- 2 **SG MONBAT RECYCLING SRL** ILFOV, ROMANIA
- 3 **MONBAT PLC DOO** INDIJA, SERBIA
- 4 **MONBAT ITALY SRL** LA SPECIA, ITALY
- 5 **PIOMBIFERA ITALIANA S.P.A.** LA SPECIA, ITALY

### OTHER ACTIVITIES

- 1 **MONBAT SPED EOOD** SOFIA, BULGARIA
- 2 **STC S.R.L.** MESAGNE, ITALY
- 3 **A.R.T.MONBAT AD** DOBRICH, BULGARIA

# LIGHT VEHICLE BAT



## START-STOP VEHICLES


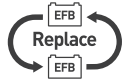
ADVANCED START-STOP

BASIC START-STOP

AGM SERIES

EFB SERIES

## VEHICLE REQUIREMENTS

START-STOP SYSTEM REDUCED CO <sub>2</sub> EURO 5/6	 MANUFACTURER RECOMMENDATION Change with same type	 MANUFACTURER RECOMMENDATION Change with same type
START-STOP SYSTEM	✓	✓
REGENERATIVE BRAKING	■ ■ ■ ■ ■	✗
HEAVY URBAN DRIVING	■ ■ ■ ■ ■	■ ■ ■ ■ ■
ADVANCED EQUIPMENT	■ ■ ■ ■ ■	■ ■ ■ ■ ■

## BATTERY REQUIREMENTS

CRANKING POWER - CCA	■ ■ ■ ■ ■	■ ■ ■ ■ ■
CYCLING CAPABILITY	■ ■ ■ ■ ■	■ ■ ■ ■ ■
CHARGE ACCEPTANCE	■ ■ ■ ■ ■	■ ■ ■ ■ ■
LIFE EXPECTANCY	■ ■ ■ ■ ■	■ ■ ■ ■ ■
<b>BEST CHOICE</b>	<b>MILD HYBRID</b>	<b>LONG LIFE</b>

# BATTERY RANGE



## CONVENTIONAL VEHICLES

HEAVY URBAN DRIVING

MODERATE EQUIPMENT

PREMIUM SERIES

FORMULA HIGH HEAT SERIES

×	×
×	×
■ ■ ■ ■ ■	■ ■ ■
■ ■ ■ ■	■ ■ ■
■ ■ ■ ■ ■	■ ■ ■
■ ■ ■ ■	■ ■
■ ■ ■ ■	■ ■ ■
■ ■ ■ ■	■ ■ ■ ■ ■
EXTRA POWER	VAST RANGE

# THE FUTURE

## AGM START-STOP

In the coming years around 80% of newly manufactured cars will be equipped with a Start-Stop system to reduce fuel consumption and CO<sub>2</sub> emissions by turning off idling engines. Supporting Start-Stop systems is just one of the required battery functions as new cars are equipped with an increasing number of power hungry luxury features - navigation systems, multimedia displays, Wi-Fi and smartphone interfaces.



## BENEFITS

## VALVE REGULATED LEAD-ACID (VRLA)

- Original equipment (OE) quality product and specification
- Designed & developed for vehicles with advanced Start-Stop systems with regenerative braking for energy recovery
- Ensuring fuel saving and reducing CO<sub>2</sub> emissions
- 5 times better cycle life compared to conventional batteries.
- Highest cold cranking amperes (CCA) enables engine starts even in extreme climates while keeping all features functioning
- Highest Level of safety by AGM VRLA technology (Valve Regulated)
- Long shelf life
- Eco Friendly Product and 99% Recyclable

## RECOMMENDED FOR:

- Micro Hybrid & Mild Hybrid (MHEV) with Start-Stop systems
- Ideal for large cars, SUVs, vans and all modern vehicles with Start-Stop systems and power-hungry electrical items
- Wide car park coverage from limited number of SKUs
- Optimal solution for partial state of charge operation

## PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling





LEVEL M3  
EN50342-6



ADVANCED  
EQUIPMENT



HEAVY URBAN  
DRIVING



SAFETY OF  
OPERATION



LIFE  
EXPECTANCY



CCA  
CAPABILITY

## BATTERY CLASSIFICATION AS PER EN 50342 - 1,6:2015

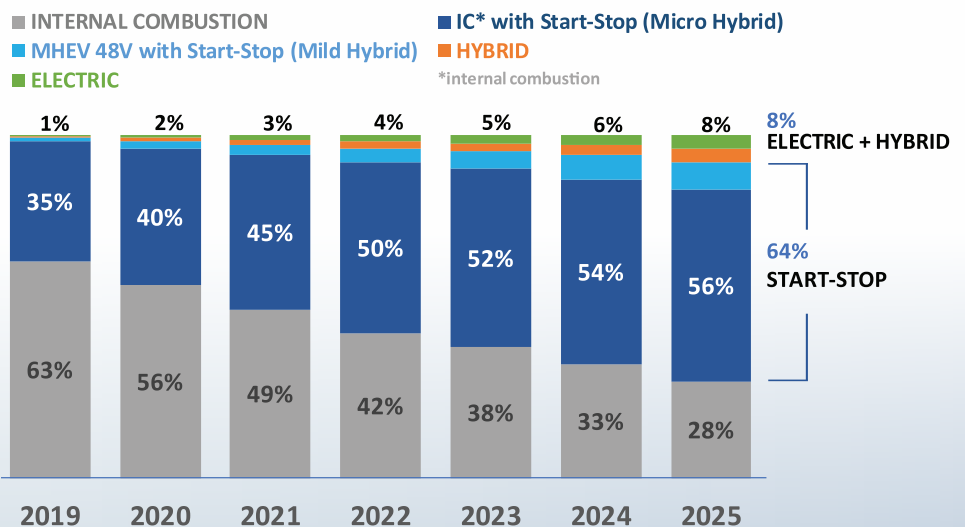
Water Consumption	Charge Retention	Vibration Resistance	Endurance Level	Micro-cycle Performance
W5	C2	V3	E3	M3

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
AGM L2 56001	60	640	670	L2	242	175	190	0		1	B13
AGM L3 57001	70	760	800	L3	278	175	190	0		1	B13
AGM L4 58001	80	840	880	L4	310	175	190	0		1	B13
AGM L5 59501	95	860	900	L5	353	175	190	0		1	B13

- In 2019 light vehicles with Start-Stop systems accounted for nearly 36% of the European car-park mix
- The trend points to a progressive increase in the number of cars that feature a Start-Stop system in the coming years
- By 2025 the percentage of driven cars with Start-Stop systems is expected to grow to a total of 64% (Mild and Micro Hybrids)
- The Expected growth in the aftermarket of OE replacement AGM and EFB batteries is therefore expected to reach approximately 56%

### Expected trend for changes in the European car-park mix



\*Source: EU28+EFTA ( European Free Trade Association ), Monbat research estimation

### IMPORTANT

AGM BATTERY MUST BE REPLACED WITH AGM.



# NEW TREND

## EFB START-STOP

EFB technology quickly became the primary choice of most vehicle manufacturers with entry level Start-Stop systems. Vehicles today are specially designed to meet and exceed the requirements of those systems. The new extended range of MONBAT EFB series features carbon technology additives to the NAM for greater dynamic charge acceptance bringing the latest OEM trend to the aftermarket.



## BENEFITS

## SEALED MAINTENANCE FREE

- Original equipment (OE) quality product and specification
- Designed & developed for vehicles with entry level Start-Stop systems
- 4 times better cycle life compared to conventional batteries
- Exceptional dynamic charge acceptance thanks to carbon technology additive in NAM
- High level reliability for heavy urban driving on short distances and frequent stops
- Built-in charge level indicator - MAGIC EYE
- Eco Friendly Product and 99% Recyclable

## RECOMMENDED FOR:

- Micro Hybrid vehicles with entry level Start-Stop systems
- Wide car park coverage for EU and Asian models. Range features 10 types DIN and JIS sizes.
- Ideal compatibility with standard power train vehicles that make lots of regular short journeys
- Optimal solution for partial state of charge operation

## PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling





LEVEL M2  
EN50342-6



ADVANCED  
EQUIPMENT



HEAVY URBAN  
DRIVING



SEALED  
MAINTENANCE  
FREE



LIFE  
EXPECTANCY



CCA  
CAPABILITY

## BATTERY CLASSIFICATION AS PER EN 50342 - 1,6:2015

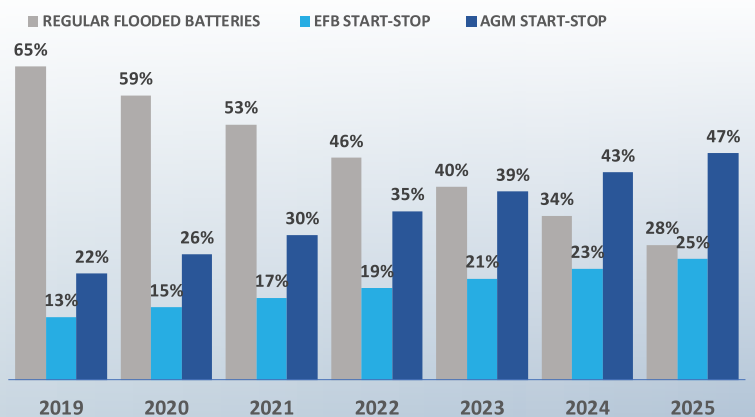
Water Consumption	Charge Retention	Vibration Resistance	Endurance Level	Micro-cycle Performance
W4	C2	V2	E2	M2

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
EFB 56002 DIN	60	560	600	L2	242	175	190	0		1	B13
EFB 90D23L JIS	65	560	600	D23	230	170	220	0		1	B01
EFB 90D23R JIS	65	560	600	D23	230	170	220	1		1	B01
<b>NEW</b> EFB 56502 DIN	65	680	720	LB3	278	175	175	0		1	B14
EFB 57002 DIN	70	680	720	L3	278	175	190	0		1	B13
EFB 100D26L JIS	72	680	720	D26	260	170	220	0		1	B01
<b>NEW</b> EFB 57502 DIN	75	740	780	LB4	310	175	175	0		1	B14
EFB 58002 DIN	80	740	780	L4	310	175	190	0		1	B13
EFB 115D31L JIS	85	740	780	D31	304	173	220	0		1	B01
EFB 59002 DIN	90	840	880	L5	353	175	190	0		1	B13

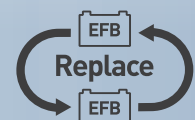
- In 2019 regular flooded batteries are twice as much as the Start-Stop batteries
- The trend points to a progressive increase in the number of cars that feature a Start-Stop system in the coming years
- By 2025 the percentage of driven cars with Start-Stop systems is expected to surpass flooded batteries and triple their volume.
- In addition AGM Start-Stop batteries will open a 20% gap to EFB Start-Stop due to further rise in electrical equipment

EXPECTED TREND FOR USAGE OF AGM, EFB AND REGULAR FLOODED BATTERIES



### IMPORTANT

Some basic-level Start-Stop vehicles come with an EFB. EFB batteries should always be replaced with EFB. To improve performance, EFB batteries alternatively can be replaced with an AGM battery.



# NEXT GENERATION PREMIUM SERIES

MONBAT Premium series is the newest High Performance battery for the next generation of light vehicles with conventional ignition systems. The wide range of coverage features carbon technology additive in NAM for greater dynamic charge acceptance and brings latest OE trend to the aftermarket.



## BENEFITS

## SEALED MAINTENANCE FREE

- Original equipment (OE) quality product and specification.
- 3 times better cycle life stability compared to conventional batteries.
- Exceptional dynamic charge acceptance thanks to carbon technology additive in NAM
- Ideal for extreme weather conditions thanks to the latest Full Frame Punch technology and pasting scrim
- +30% enhanced starting power for top level performance
- High level of reliability
- Built-in charge level indicator - MAGIC EYE
- Eco Friendly Product and 99% Recyclable

## RECOMMENDED FOR:

- Designed & developed for highly equipped vehicles with the highest power demands
- Ideal compatibility with standard power train vehicles that make lots of regular short journeys in urban area
- Full coverage for all EU and Asian models of vehicles
- Comprehensive Range features 20 types of DIN and JIS sizes covering 90% of the car park

## PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling



EXTREME TEMPERATURES	ADVANCED EQUIPMENT	HEAVY URBAN DRIVING	SEALED MAINTENANCE FREE	LIFE EXPECTANCY	CCA CAPABILITY
■■■■■	■■■■■	■■■■■	■■■■■	■■■■■	■■■■■

## BATTERY CLASSIFICATION AS PER EN 50342 - 1:2015

Water Consumption	Charge Retention	Vibration Resistance	Endurance Level
W4	C2	V2	E2

## SPECIFICATIONS

	Battery Type	Performance			Box	Dimensions			Technical Characteristics			
		Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
NEW	MF 55B19L	45	330	350	B19	197	128	220	0		3	B01
NEW	MF 55B19R	45	330	350	B19	197	128	220	1		3	B01
NEW	MF 75B24L	50	400	420	B24	237	128	220	0		3	B00
NEW	MF 75B24R	50	400	420	B24	237	128	220	1		3	B00
NEW	MF 55327	53	500	520	LB1	207	175	175	0		1	B14
	MF 55612	56	560	600	L1	207	175	190	0		1	B13
NEW	MF 56378	63	600	640	LB2	242	175	175	0		1	B14
	MF 56378	63	600	640	L2	242	175	190	0		1	B13
	MF 56619	66	660	700	L2	242	175	190	0		1	B13
NEW	MF 75D26L	65	600	640	D23	230	170	220	1		1	B01
NEW	MF 75D23R	65	600	640	D23	230	170	220	0		1	B01
NEW	MF 57546	75	720	760	LB3	278	175	175	0		1	B14
	MF 57583	75	720	760	L3	278	175	190	0		1	B13
	MF 58043	80	760	800	L3	278	175	190	0		1	B13
NEW	MF 95D26L	75	700	730	D26	260	170	220	0		1	B01
NEW	MF 95D26R	75	700	730	D26	260	170	220	1		1	B01
NEW	MF 58515	85	780	830	LB4	310	175	175	0		1	B14
	MF 59046	90	820	860	L4	310	175	190	0		1	B13
NEW	MF 135D31L	100	820	860	D31	304	173	220	0		1	B01
NEW	MF 135D31R	100	820	860	D31	304	173	220	1		1	B01
	MF 60044	100	920	970	L5	353	175	190	0		1	B13

# BEST SELLER

## FORMULA HIGH HEAT SERIES

MONBAT Formula series is a vast range of automotive batteries complying with all auto car park and OE specifications. It is designed for average equipment vehicles which require extra starting power with consistently high performance for longer periods of time. They are specially developed for extremely high ambient temperatures. Suitable for regions with a pronounced tropical climate such as North Africa and Middle East.



### BENEFITS

### SEALED MAINTENANCE FREE

- Original equipment (OE) quality product and specification
- Advanced Ex-Metal Calcium technology for exceptional starting power
- Developed according to SAE & IEC standards, which simulate high heat automotive service
- High level safety and longer life with built-in SMF labyrinth system for gas recombination
- Designed & developed for the complete international auto park of European and Asian models of cars
- Comprehensive range of DIN and JIS available with a HIGH HEAT Technology for Tropical Markets
- Built-in charge level indicator - MAGIC EYE
- Eco Friendly Product and 99% Recyclable

### RECOMMENDED FOR:

- Designed & developed for vehicles with average to high power demands
- Ideal compatibility with moderate power train vehicles for everyday driving
- Comprehensive Range with 34 models with 99% auto park coverage

### PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling



UP TO 75° HIGH HEAT RESISTANCE*	MODERATE EQUIPMENT	NORMAL DRIVING	SEALED MAINTENANCE FREE	LIFE EXPECTANCY	CCA CAPABILITY
■■■■■	■■■	■■■	■■■■■	■■■■■	■■■

\*acc. to SAE & IEC standards

## BATTERY CLASSIFICATION AS PER EN 50342 - 1:2015

Water Consumption	Charge Retention	Vibration Resistance	Endurance Level
W4	C2	V1	E1

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
MF 54459	44	380	400	L1	207	175	190	0		1	B13
MF 55027	50	420	450	L1	207	175	190	0		1	B13
MF 55559	55	480	500	L2	242	175	190	0		1	B13
MF 55565	55	480	500	L2	242	175	190	1		1	B13
MF 56219	62	510	540	L2	242	175	190	0		1	B13
MF 56203	62	510	540	L2	242	175	190	1		1	B13
MF 56638	66	580	640	L3	278	175	190	0		1	B13
MF 57220	72	640	680	L3	278	175	190	0		1	B13
MF 57412	75	680	720	L4	278	175	190	0		1	B13
MF 58043	80	720	740	L4	315	174	190	0		1	B13
MF 58827	88	750	780	L5	353	175	190	0		1	B13
MF 60038	100	800	840	L5	354	174	190	0		1	B13

## TEMPERATURE RANGE

Battery life expectancy according to temperature under the hood		
Extreme cold	-10°/ -25°C	> 42 months
Cold	+5°/ -10°C	> 52 months
Mild	+20°/ +5°C	> 42 months
Heat	+35°/ +20°C	> 36 months
High Heat	+50°/ +35°C	> 26 months
Extreme Heat	+75°/ +50°C	> 18 months

Only High Heat Batteries - DIN and JIS

# BEST SELLER

## FORMULA ASIA **HIGH HEAT** SERIES

MONBAT Formula series is a vast range of automotive batteries complying with all auto car park and OE specifications. It is designed for average equipment vehicles which require extra starting power with consistently high performance for longer periods of time. They are specially developed for extremely high ambient temperatures. Suitable for regions with a pronounced tropical climate such as North Africa and Middle East.



### BENEFITS

### SEALED MAINTENANCE FREE

- Original equipment (OE) quality product and specification
- Advanced Ex-Metal Calcium technology for exceptional starting power
- Developed according to SAE & IEC standards, which simulate high heat automotive service
- High level safety and longer life with built-in SMF labyrinth system for gas recombination
- Designed & developed for the complete international auto park of European and Asian models of cars
- Comprehensive range of DIN and JIS available with a HIGH HEAT Technology for Tropical Markets
- Built-in charge level indicator - MAGIC EYE
- Eco Friendly Product and 99% Recyclable

### RECOMMENDED FOR:

- Designed & developed for vehicles with average to high power demands
- Ideal compatibility with moderate power train vehicles for everyday driving
- Comprehensive Range with 34 models with 99% auto park coverage

### PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling





UP TO 75°  
HIGH HEAT  
RESISTANCE\*



MODERATE  
EQUIPMENT



NORMAL  
DRIVING



SEALED  
MAINTENANCE  
FREE



LIFE  
EXPECTANCY



CCA  
CAPABILITY



\*acc. to SAE & IEC standards

## BATTERY CLASSIFICATION AS PER EN 50342 - 1:2015

Water Consumption	Charge Retention	Vibration Resistance	Endurance Level
W4	C2	V1	E1

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout		Terminals	Hold Down
MF40B19L	35	250	280	B19	187	127	220	0		3	B00
MF40B19R	35	250	280	B19	187	127	220	1		3	B00
MF50B24L	45	330	350	B24	234	127	220	0		3	B00
MF50B24R	45	330	350	B24	234	127	220	1		3	B00
MF50B24LS	45	330	350	B24	234	127	220	0		1	B00
MF50B24RS	45	330	350	B24	234	127	220	1		1	B00
MF55D23L	60	480	500	D23	230	170	220	0		1	B01
MF55D23R	60	480	500	D23	230	170	220	1		1	B01
MF75D23L	65	530	550	D23	230	172	220	0		1	B01
MF75D23R	65	530	550	D23	230	172	220	0		1	B01
MF55D26L	60	480	500	D26	257	172	220	0		1	B01
MF55D26R	60	480	500	D26	257	172	220	1		1	B01
MF80D26L	70	500	530	D26	257	172	220	0		1	B01
MF80D26R	70	500	530	D26	257	172	220	1		1	B01
MF75D31L	75	560	600	D31	302	172	220	0		1	B01
MF75D31R	75	560	600	D31	302	172	220	1		1	B01
MF95D31L	80	600	650	D31	302	172	220	0		1	B01
MF95D31R	80	600	650	D31	302	172	220	1		1	B01
MF105D31L	90	650	700	D31	302	172	220	0		1	B01
MF105D31R	90	650	700	D31	302	172	220	1		1	B01
MF115D31L	95	780	830	D31	302	172	220	0		1	B01
MF115D31R	95	780	830	D31	302	172	220	1		1	B01

# HEAVY-DUTY BATTERY












**AGM SERIES**

## VEHICLE REQUIREMENTS

LIFE EXPECTANCY	■ ■ ■ ■ ■
EQUIPMENT LEVEL	■ ■ ■ ■ ■
VIBRATION RESISTENCE	■ ■ ■ ■ ■
CYCLING CAPABILITY	■ ■ ■ ■ ■
CRANKING POWER - CCA	■ ■ ■ ■ ■
VALUE FOR CUSTOMER	■ ■ ■ ■ ■

## RECOMMENDATION BY

APPLICATION	TYPE OF VEHICLE	AGM SERIES
REAR END INSTALLATION	 TIR	✓
HOTEL FUNCTION	 TIR	✓
VIBRATION RESISTENCE	 TIR	✓
ROUGH TERRAIN	 TIR	✓
CYCLING CAPABILITY	 TIR	✓
EQUIPMENT LEVEL	 TIR	✓
EXTREME CLIMATE		
SPECIAL ( AGRICULTURAL AND CONSTRUCTION) VEHICLES		
STANDARD VEHICLES, OLDER FLEETS		

# RY RANGE



EFB SERIES	SHD SERIES	SMF SERIES
■ ■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■
■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■
■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■
■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■
■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■
■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■	■ ■ ■ ■ ■ ■ ■ ■

EFB SERIES	SHD SERIES	SMF SERIES
✓		
✓		
✓	✓	
✓	✓	
✓	✓	
✓	✓	
✓	✓	✓
✓	✓	✓
	✓	✓

# THE FUTURE

## AGM SUPER HEAVY DUTY

MONBAT AGM SHD is the newest generation commercial vehicle battery that combines latest VRLA technology for unmatched deep cycle performance with high degree of reliability for your fleet. It has been developed in cooperation with the leading OEMs to support latest equipment innovations that will become the standard for heavy duty vehicles in the near future. AGM Super Heavy Duty is the optimal solution for unlocking the highest demanding application and power hungry features in the next generation trucks and buses.



## BENEFITS

## VALVE REGULATED LEAD-ACID (VRLA)

- Original equipment (OE) quality product and specification
- 5 times better cycle life stability compared to conventional batteries.
- Withstands deep discharges up to 80% DOD for maximum reliability.
- Highest cold cranking amperes (CCA) enables engine starts even in extreme climates while keeping hotel functions
- Maximum level of safety by AGM VRLA technology (Valve Regulated)
- Highest Vibration Resistance V3/V4
- Maintenance Free Technology with long lifespan
- Ensuring fuel saving and reducing CO2 emissions
- Eco Friendly Product and 99% Recyclable

### RECOMMENDED FOR:

- Rear chassis installation (EURO5/6)
- Latest generation long-haul trucks with advanced hotelling function
- Latest generation city buses and coaches with highest electrical equipment
- Newest express delivery trucks with power hungry equipment or deep cycling needs
- Applications with partial state of charge operation
- Any rough terrain application under high vibrations

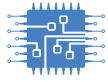
### PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling





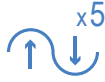
HOTEL  
FUNCTION



EXTREME  
EQUIPMENT



INTERNAL GAS  
RECOMBINATION



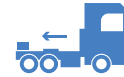
HIGH CYCLING  
DURABILITY



SPILL AND  
LEAK PROOF



HARD  
TRACK



REAR END  
INSTALLATION



LIFE  
EXPECTANCY



CCA  
CAPABILITY



## BATTERY CLASSIFICATION AS PER EN 50342 - 1,6:2015

Water Consumption	Charge Retention	Vibration Resistance	Endurance Level	Micro-cycle Performance
W5	C2	V3/V4	E3	M3

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
AGM 72001	220	1400	1480	C	514	274	242	3		1	B00

### New EU Directives

Since 2009 EU has taken further measures regarding NOx emissions and reduction of particulate matter.

Nowadays Euro 5/Euro 6 vehicles have new chassis design to integrate the Selective Catalytic Reduction (SCR) system and AdBlue tank.

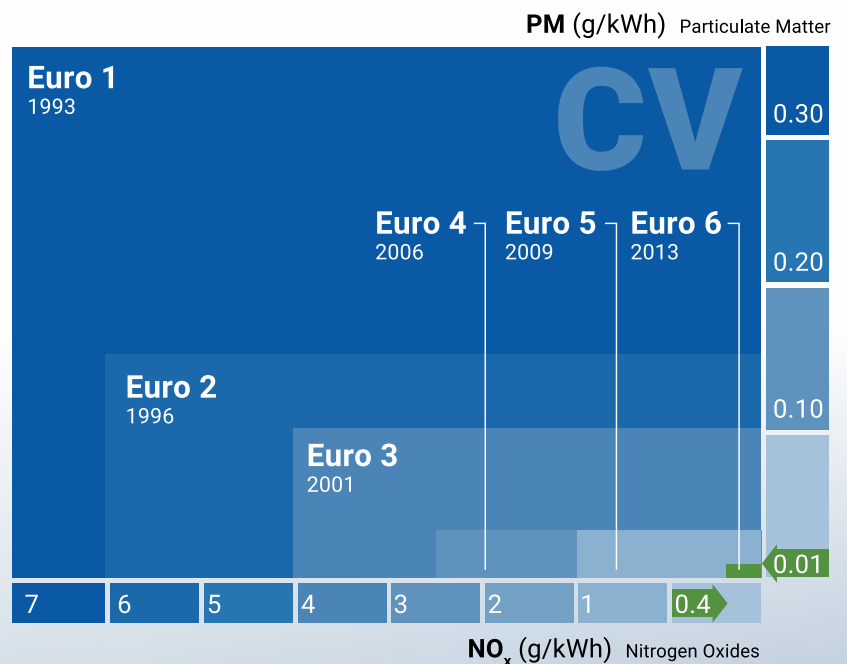
Truck manufacturers have moved the batteries into the rear-chassis position and batteries are exposed to greater vibrations.

### IMPORTANT

AGM BATTERY  
MUST BE REPLACED  
WITH AGM.



### EMISSION STANDARDS AS DEFINED BY EU DIRECTIVES



# NEW TREND

## EFB SUPER HEAVY DUTY

Today commercial vehicles are no longer simple trucks which are used as pure transport or work vehicles. Increased environmental regulations are changing the trends on the market and truck batteries today must provide not only reliable starting power but the ability to supply high power electronic equipment in EURO 5/6 vehicles. MONBAT EFB SHD range is now upgraded and enhanced to meet big energy requirements combined with high vibration resistance for absolute reliability of your fleet.



## BENEFITS

## SEALED MAINTENANCE FREE

- Original equipment (OE) quality product and specification
- 3 times the cycle life stability compared to conventional batteries
- Exceptional dynamic charge acceptance thanks to carbon technology additive in NAM
- Highest Vibration Resistance V3/V4 thanks to robust design
- High cold cranking amperes (CCA) and reliable starting after overnight stay
- High level safety and longer life with built-in SMF labyrinth system for gas recombination
- Eco Friendly Product and 99% Recyclable

## RECOMMENDED FOR:

- Rear chassis installation (EURO5/6)
- Power hungry long-haul trucks including hotelling function
- Advanced City buses and Coaches with additional electrical equipment & consumers
- Express delivery trucks with power hungry equipment or deep cycling needs
- Applications with partial SoC operation
- Rough terrain machines and vehicles with high vibrations
- Standard power train commercial vehicle with lots of regular short journeys & stops

## PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling

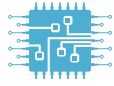




HOTEL  
FUNCTION



CASTED  
GRIDS



ADVANCED  
EQUIPMENT



EXTREME  
TEMPERATURES



HIGH CYCLING  
DURABILITY



HARD  
TRACK



REAR END  
INSTALLATION



LIFE  
EXPECTANCY



CCA  
CAPABILITY



## BATTERY CLASSIFICATION AS PER EN 50342 - 1:2015

Water Consumption	Charge Retention	Vibration Resistance	Endurance Level
W4	C2	V3	E3

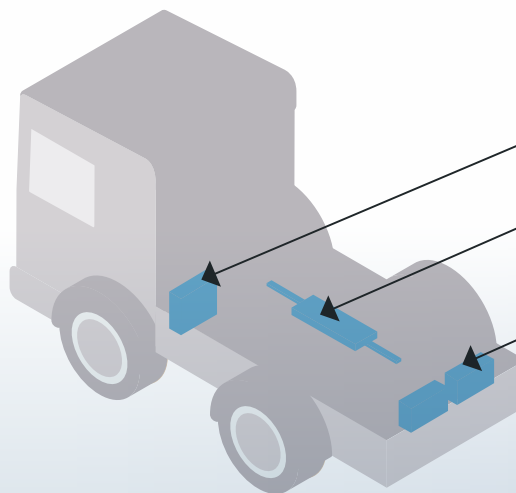
## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
EFB 68502	185	1100	1160	B	513	223	223	3		1	B00
EFB 73502	235	1250	1320	C	514	276	242	3		1	B00

### Fleet owners decision

Alongside the new EU Directives, several economic factors (higher fuel costs, road taxes, higher tolls, parking charges, higher charges for entering no emissions zone) have forced fleet owners to upgrade by purchasing new Euro 5/6 trucks. Installing the batteries at the rear faced the batteries under great vibrations.

Only batteries which have met V3/V4 test acc to EN 50342-6:2015 can guarantee a longer battery lifespan even in high vibration condition.



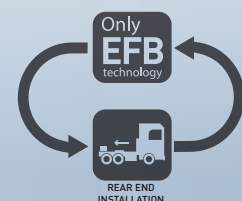
**ADBLUE® TANK**

**SCR CATALYST**

**BATTERIES**

### IMPORTANT

EFB BATTERY  
MUST BE REPLACED  
WITH EFB.



# UNLOCK YOUR FLEET POTENTIAL SUPER HEAVY DUTY

MONBAT SHD series is our newest high performance battery for wide range of commercial vehicles relying on unconditional power supply. The range is now sealed maintenance free with advanced glass free separator for great endurance and lifespan under heavy urban driving or mild cycling applications.



## BENEFITS

- Original equipment (OE) quality product and specification
- 2 times better cycle life stability compared to conventional batteries
- Robust and reliable design with hot melt resin for improved vibration resistance
- Excellent performance for light cycling applications
- High level safety and longer life with built-in SMF labyrinth system for gas recombination
- Eco Friendly Product and 99% Recyclable

## SEALED MAINTENANCE FREE

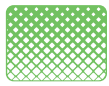
### RECOMMENDED FOR:

- Standard chassis installation (including EURO5/6)
- Long-haul trucks
- City buses and Coaches with moderate electrical equipment
- Special vehicles with tail-lift platform
- Delivery or Utility vehicles in city traffic
- Rough terrain construction machines with high vibrations
- Any standard power train commercial vehicle with short journeys & stops

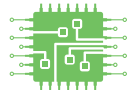
### PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling





CASTED  
GRIDS



ADVANCED  
EQUIPMENT



HARD  
TRACK



HIGH CYCLING  
DURABILITY



LONG DISTANCE  
DRIVING



LIFE  
EXPECTANCY



CCA  
CAPABILITY



## BATTERY CLASSIFICATION AS PER EN 50342 - 1:2015

Water Consumption	Charge Retention	Vibration Resistance	Endurance Level
W4	C2	V2	E2

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
MF N120 SHD	125	800	850	F51	513	189	220	4		1	B00
MF 64020 SHD	140	850	900	A	513	189	220	3		1	B00
MF 65511 SHD	155	900	950	A	513	189	220	3		1	B00
MF N150 SHD	155	900	950	G51	513	223	223	4		1	B00
MF 67043 SHD	170	1000	1050	B	513	223	223	3		1	B00
MF 68032 SHD	180	1100	1160	B	513	223	223	3		1	B00
MF 70006 SHD	200	1150	1200	B	513	223	223	3		1	B00
MF N200 SHD	200	1150	1200	H52	514	276	242	4		1	B00
MF 70027 SHD	200	1150	1200	C	514	276	242	3		1	B00
MF 73011 SHD	230	1250	1320	C	514	276	242	3		1	B00

Monbat SHD offers Extra Life when mounted in standard power train commercial vehicle without special requirements. The best choice for hard working vehicles and construction machines



# BEST SELLER

## SMF SERIES

MONBAT SMF series is a vast range of heavy duty batteries complying with complete international CV park and any OE specifications. It is designed for standard commercial vehicles which require extra starting power with consistently high performance for longer periods of time.



## BENEFITS

## SEALED MAINTENANCE FREE

- Original equipment (OE) quality product and specification
- Advanced ConCast/ConRoll technology for great starting power and corrosion resistance
- Highest cranking power in extreme climates
- High level safety and longer life with built-in SMF labyrinth system for gas recombination
- Wide range including special types
- Eco Friendly Product and 99% Recyclable

## RECOMMENDED FOR:

- Standard chassis installation
- Various trucks and vehicles with large engines requiring high CCA
- Agricultural and construction machines
- Ideal for standard power train commercial vehicles without special requirements in terms of vibration or cycling power

## PACKAGING AVAILABLE UPON REQUEST:

- Cardboard box
- Single battery foiling





CASTED  
GRIDS



MODERATE  
EQUIPMENT



EXTREME  
TEMPERATURES



LONG DISTANCE  
DRIVING



LIFE  
EXPECTANCY



CCA  
CAPABILITY



## BATTERY CLASSIFICATION AS PER EN 50342 - 1:2015

Water Consumption	Charge Retention	Vibration Resistance	Endurance Level
W4	C2	V2	E1

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
MF 60002 HD	100	700	730	GR31	336	173	235	9		1	B00
MF 60502 HD	105	750	790	GR31	336	173	235	9		1	B00
MF 61002 HD	110	800	840	GR31	336	173	235	9		1	B00
MF 62002 HD	120	850	900	GR31	336	173	235	9		1	B00
MF 62003 HD	120	850	900	GR31	336	173	235	9		8	B00
MF N120 HD	125	800	840	F51	513	189	220	4		1	B00
MF 62545 HD	125	800	840	A	513	189	220	3		1	B00
MF 64020 HD	140	900	950	A	513	189	220	3		1	B00
MF N150 HD	155	950	1000	G51	513	223	223	4		1	B00
MF 67043 HD	170	1050	1100	B	513	223	223	3		1	B00
MF 68032 HD	180	1150	1200	B	513	223	223	3		1	B00
MF N200 HD	200	1200	1260	H52	514	276	242	4		1	B00
MF 70027 HD	200	1200	1260	C	514	276	242	3		1	B00
MF 73011 HD	230	1300	1370	C	514	276	242	3		1	B00

# LAWN AND GARDEN

MONBAT Lawn and Garden batteries are specially designed for powering ride-on movers, tillers and other garden machinery. From the heat of summer to the cold of winter, they deliver consistent starting power in every type of weather.



STANDARD EQUIPMENT



MODERATE TEMPERATURES



SEALED MAINTENANCE FREE



LIFE EXPECTANCY



CCA CAPABILITY



## BENEFITS

## SEALED MAINTENANCE FREE

- Completely maintenance free, no fill-up necessary
- Enhanced safety, leakage and spill proof
- Very high cranking performance
- Increased reliability
- High endurance
- Charge level indicator
- Eco Friendly Product and 99% Recyclable

### RECOMMENDED FOR:

- Mowers and Ride-on mowers
- Tillers
- Chipper Shredders
- Snow Blowers
- Turf Vehicles

## BATTERY CLASSIFICATION AS PER EN 50342 - 1:2015

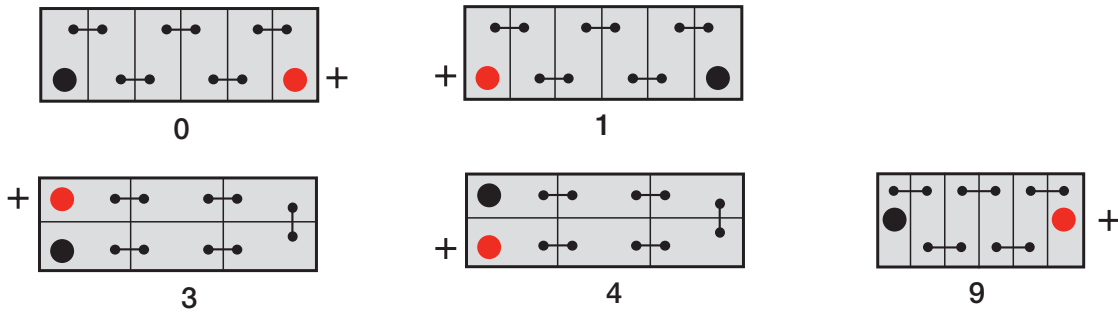
Water Consumption	Charge Retention	Vibration Resistance	Endurance Level
W4	C2	V1	E1

## SPECIFICATIONS

Battery Type	Performance			Box	Dimensions			Technical Characteristics			
	Capacity, Ah	CCA, A [EN]	CCA, A [SAE]		L	W	H	Layout	Terminals	Hold Down	
52815	28	250	260	U1	196	128	184	0		4	B00
52816	28	250	260	U1	196	128	184	1		4	B00
53230	32	280	300	U1	196	128	184	0		4	B00
53234	32	280	300	U1	196	128	184	1		4	B00

# Cell Assembly Layout

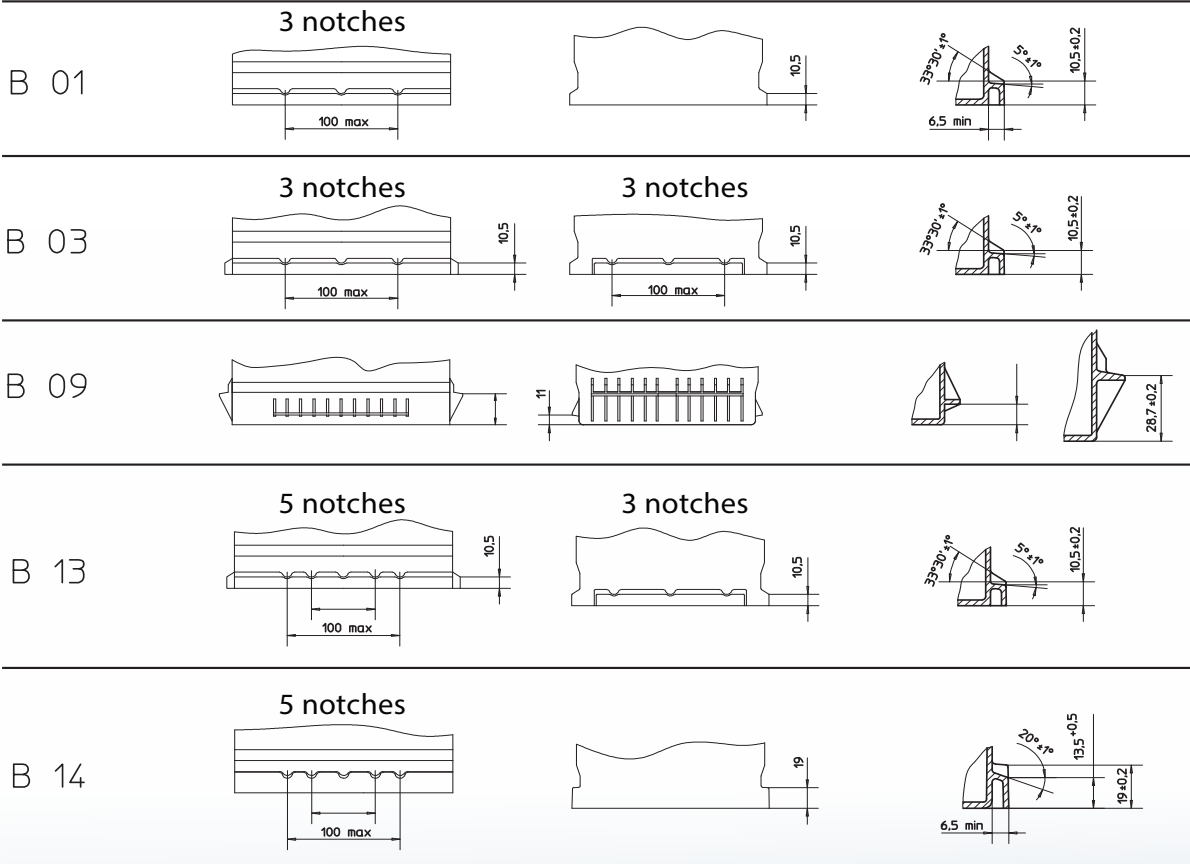
12 Volt



## Hold Down

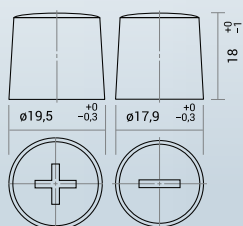
B 00

without hold down

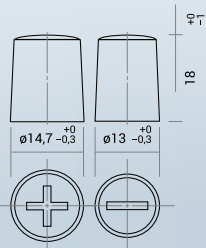


## Type of Terminals

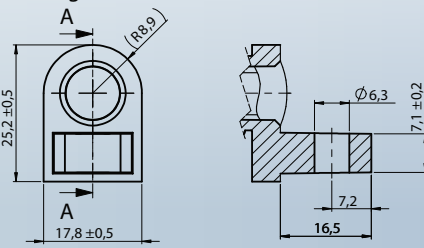
Terminal 1  
DIN Post



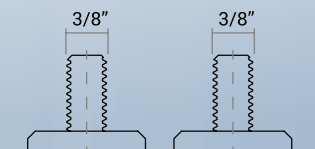
Terminal 3  
JIS Post



Terminal 4  
U1 Lug



Terminal 8  
Threaded Post





RECYCLE WITH

**MONBAT®**



**THE SOURCE OF POWER**

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HIGH HEAT

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